



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

**61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960**

April 6, 2010

4SD-SSB

MEMORANDUM

SUBJECT: Risk review comment for Vegetation Sampling Work Plan for Operable Unit 2 of the Olin McIntosh Plant Site

FROM: Sharon R. Thoms, Life Scientist *SRTh*
Technical Services Section
Superfund Support Branch
Superfund Division

THRU: Glenn Adams, Chief *GA*
Technical Services Section
Superfund Support Branch
Superfund Division

TO: Beth Walden, Remedial Project Manager
Superfund Remedial and Site Evaluation Branch
Superfund Division

Per your request on March 3, I have reviewed the Vegetation Sampling Work Plan for Operable Unit 2 of the Olin McIntosh Plant Site in McIntosh, Alabama. The report was dated February 4, 2010.

GENERAL COMMENTS:

1. Mercury in vegetation should be analyzed by Method E245.6, because it has a sample digestion procedure that is better suited to complex sample matrices found in tissues. It is a newer method that in EPA's experience gives lower detection limits and more reliable results than Method 7471. Method E245.6 gives accurate results that are better suited to predicting plant uptake of mercury. With Method E245.6 the plot of mercury concentration in plants to mercury concentration in soil will be less scattered, achieving a more accurate estimate of bioaccumulation. Methyl mercury in vegetation should be analyzed by Method E1631, which is a similar method. Method E245.5 should be used for analyzing mercury in soils/sediments (same method but for soils/sediments).

2. The work plan should discuss the anticipated concentrations of chemicals of concern (COCs) in the soils in the areas where the samples are to be collected. The gradient of contamination should be taken into account in the sample design. Discuss the maximum concentration in soil where the plant samples will be taken. The work plan should aim to collect a vegetation sample from the most contaminated location in the terrestrial habitat. Other samples should aim for moderately contaminated locations. Because we have three contaminants, the sampling design might have to get creative to capture maxima of each. The reason for attempting to sample the maximum concentrations in soils is because sampling over the widest range of concentrations improves the estimate of the bioaccumulation factor, derived from a plot of plant tissue concentrations versus soil concentrations. The confidence interval around the slope of a bioaccumulation line drawn on such a plot can be narrowed (more precise estimate), for a given number of samples, by sampling over the widest gradient of concentrations possible. This comment provides advice that will maximize the information obtained from expenditure of resources.
3. Discuss the types of vegetation that will be sampled. Samples should be taken from low-growing vegetation only a couple feet off the ground. Perennial plant leaves and annuals with high leaf surface area should be targeted. Plants with rough or textured leaves are preferred. Spanish moss can be used. Include the SOP.
4. The DDT-R, mercury, and hexachlorobenzene should be measured in plant tissue from all stations. DDT-R has been detected at relatively high levels in the northwestern portion of the basin. EPA is not ready to assume DDT-R is only found in the northern part of the site.
5. Soil samples should be dry sieved to 2-mm to remove gravel and woody debris. This practice will reduce variability. Dry sieving means not adding any water. Materials are pressed through the sieve with a gloved hand.
6. Vegetation samples should be frozen to a deep freeze (10°C) and shipped on dry ice.
7. Include total organic carbon and grain size on soil/sediment samples.
8. Discuss level of quality review that data will receive, such as how data quality flags will be assigned.
9. Include in the revised work plan the standard operating procedures for vegetation sampling and for sample preparation prior to sample digestion. Proper sample preparation is critical to obtaining reliable results. Examples of SOPs are attached.
10. Please include the name of the laboratory where the samples will be sent.

If you should have any questions please feel free to contact me at 2-8666.